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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MEW, KEVIN D	
ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/966,349	HOOPER ET AL.	
	Examiner	Art Unit	
	Kevin Mew	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 September 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12-13,19-22 and 24-31* is/are rejected.

7)☒ Claim(s) *11,14-18 and 23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 September 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In particular, the phrase "A method of forwarding a network packet is described" should be corrected.

Claim Objections

2. Claims 5-7, 10-12, 15, 23-24 are objected to because of the following informalities:

In claim 5, line 2, replace "to indicates" with "to indicate."

In claim 6, lines 2-3, replace "the specified layer" with "a specified layer."

In claim 7, line 1, replace "the tables includes" with "the tables include."

In claim 10, line 5, replace "which return" with "which returns."

In claim 11, line 6, replace "the encap bytes" with "the encap flags."

In claim 12, line 3, replace "the blank field" with "a blank field."

In claim 15, line 3, replace "the encap bytes" with "the encap flags."

In claim 23, line 7, replace "the encap bytes" with "the encap flags."

In claim 24, line 4, replace "the blank field" with "a blank field."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5-10, 12-13, 19-22, 24-26, 28-31 are rejected under 35 U.S.C. 102(b) as being anticipated by the admitted prior art, Chaudhri et al. (WO 98/20647).

Regarding claim 1, Chaudhri discloses a method of forwarding a network packet (forwarding a packet in a multicast environment, see page 5, lines 3-26) comprises:

reading a table (a linked list entry) containing a plurality of flags (containing five fields) to determine which of the plurality of flags is set or cleared (the echo bit field can be set to indicate if the packet must be sent back to the originator of the message, see page 5, lines 3-26); and

performing an operation on the packet to decapsulate (the first field of the linked list entry indicates the amount of encapsulation that must be removed from the incoming packet to extract the message M, see page 5, lines 3-26) or encapsulate the packet in accordance with the values of the flags (the second field indicates the amount and content of encapsulation that must be added to the message M, see page 5, lines 3-26).

Regarding claim 2, Chaudhri discloses the method of claim 1 wherein the tables are populated forwarding information (the lined list entries are populated with the destination address of the packet, see page 5, lines 3-26).

Regarding claim 3, Chaudhri discloses the method of claim 1 wherein the forwarding table structures (see Fig. 4) include a control and management structure (multicast engine 104, see Figs. 4 and 6) including a network stack interface (see Fig. 5) and table managers (packet processing/routing).

Regarding claim 5, Chaudhri discloses the method of claim 1 wherein the tables include a flag to indicate whether the bytes should be stripped from the packet and a field that indicates the number bytes to be stripped (the linked list entries include a first field to indicate the amount of encapsulation that must be removed from the incoming packet, see page 5, lines 3-26).

Regarding claim 6, Chaudhri discloses the method of claim 1 wherein the table includes a field that specifies decapsulation of header layers up to the specified layer (the linked list entries include a first field to indicate the amount of encapsulation that must be removed from the incoming packet up to a certain layer that the message M can be extracted, see page 5, lines 3-26).

Regarding claim 7, Chaudhri discloses the method claim 1 wherein the tables include a field that specifies an identifier of the current packet encapsulation type (the second field of the entry specifies the content of encapsulation, see page 5, lines 3-26).

Regarding claim 8, Chaudhri discloses the method of claim 1 wherein the tables include a flag that indicates whether bytes should be prepended to packet (the second field of an linked list entry indicates the amount and content of encapsulation that must be added to the message M in order to create a packet for that type of network), a field (the second field of the entry) that specifies the number of bytes (indicates the amount of encapsulation) and the bytes to be encapsulated (the content of encapsulation, see page 5, lines 3-26).

Regarding claim 9, Chaudhri discloses the method of claim 1 wherein tables include a Next Table Type field (the fourth field of the linked list entry) which indicates that a further lookup is required and identifies a table type (indicates the pointer to the next entry of the multicast group G and each party is associated with a particular type of network, see page 5, lines 3-26 and page 3, lines 32-38).

Regarding claim 10, Chaudhri discloses a method for encapsulating/decapsulating packets comprises:

receiving a packet (a packet comes in on a port);

reading in a first header of the packet and perform a layer 2 look-up reading a connection table which returns parameters (multicast engine looks up the data structure for the multicast group address, and the data structure also indicates whether the packet needs to be echoed, see page 6, lines 28-38);

determine if the table returned a decap or encap flag (the engine reads the data structure to specify what must be added to a message M to get a packet of the appropriate format for the destination, see page 7, lines 1-10).

Regarding claim 12, Chaudhri discloses the method claim 10 further comprising:

determining if there is a next table to examine by looking at a blank field in the currently read table (the fourth field of the current linked list entry indicates the pointer to the next entry, see page 5, lines 3-26).

Regarding claim 13, Chaudhri discloses the method of claim 12 wherein if there is a next table,

parse the next header and fetch read the next table (the next data structure is retrieved and processing is repeated for the retrieved data structure until the data structure the packet started with is reached, see page 7, lines 1-10).

Regarding claim 19, Chaudhri discloses a computer program product residing on a computer readable media for forwarding a network packet comprises instructions to cause computer to:

reading a table (a linked list entry) containing a plurality of flags (containing five fields) to determine which of the plurality of flags is set or cleared (the echo bit field can be set to indicate if the packet must be sent back to the originator of the message, see page 5, lines 3-26); and

performing an operation on the packet to decapsulate (the first field of the linked list entry indicates the amount of encapsulation that must be removed from the incoming packet to extract the message M, see page 5, lines 3-26) or encapsulate the packet in accordance with the values of the flags (the second field indicates the amount and content of encapsulation that must be added to the message M, see page 5, lines 3-26).

Regarding claim 20, Chaudhri discloses the computer program product of claim 19 wherein the tables are populated with forwarding information (the lined list entries are populated with the destination address of the packet, see page 5, lines 3-26).

Regarding claim 21, Chaudhri discloses the computer program product of claim 19 wherein the forwarding table structures (see Fig. 4) include a control and management structure (multicast engine 104, see Figs. 4 and 6) including a network stack interface (see Fig. 5) and table managers (packet processing/routing).

Regarding claim 22, Chaudhri discloses a computer program product residing on a computer readable media for forwarding a network packet comprises instructions cause a computer to:

receive a packet (a packet comes in on a port);

read in a first header of the packet and perform a layer 2 look-up reading a connection table which returns parameters (multicast engine looks up the data structure for the multicast

group address, and the data structure also indicates whether the packet needs to be echoed, see page 6, lines 28-38);

determine if the table returned a decap or encap flag (the engine reads the data structure to specify what must be added to a message M to get a packet of the appropriate format for the destination, see page 7, lines 1-10).

Regarding claim 24, Chaudhri discloses the computer program product of claim 22 further comprising instructions to:

determine if there is a next table to examine by looking at a blank field in the currently read table (the fourth field of the current linked list entry indicates the pointer to the next entry, see page 5, lines 3-26).

Regarding claim 25, Chaudhri discloses the computer program product claim 24 wherein if there is a next table, the computer program executes instructions to:

parse the next header and fetch read the next table (the next data structure is retrieved and processing is repeated for the retrieved data structure until the data structure the packet started with is reached, see page 7, lines 1-10).

Regarding claim 26, Chaudhri discloses the computer program product claim 22 wherein the packet is comprised of one or payload, the computer program product further executes instructions to

copy the payload portion the packet to a packet buffer (engine 104 includes a mechanism for storing an extracted message M, see page 8, lines 6-21).

Regarding claim 28, Chaudhri discloses a processor for processing a network packet comprises:

a computer storage media storing instructions to cause a computer to:

read a table (a linked list entry) containing a plurality of flags (containing five fields) to determine which of the plurality of flags is set or cleared (the echo bit field can be set to indicate if the packet must be sent back to the originator of the message, see page 5, lines 3-26); and

perform an operation on the packet to decapsulate (the first field of the linked list entry indicates the amount of encapsulation that must be removed from the incoming packet to extract the message M, see page 5, lines 3-26) or encapsulate the packet in accordance with the values of the flags (the second field indicates the amount and content of encapsulation that must be added to the message M, see page 5, lines 3-26).

Regarding claim 29, Chaudhri discloses the processor of claim 28 wherein the table contains forwarding information (the lined list entries are populated with the destination address of the packet, see page 5, lines 3-26).

Regarding claim 30, Chaudhri discloses a method of decapsulating a network packet comprises:

reading a table (a linked list entry) containing a plurality of flags (containing five fields) to determine which of the plurality of flags is set or cleared (the echo bit field can be set to indicate if the packet must be sent back to the originator of the message, see page 5, lines 3-26); and

performing an operation on the packet to decapsulate the packet in accordance with the values of the flags (the first field of the linked list entry indicates the amount of encapsulation that must be removed from the incoming packet to extract the message M, see page 5, lines 3-26).

Regarding claim 31, Chaudhri discloses the method of claim 30 wherein the table contains forwarding information (the lined list entries are populated with the destination address of the packet, see page 5, lines 3-26).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chaudhri et al. in view of the admitted prior art, Allen et al. (WO 01/17179).

Regarding claim 4, Chaudhri discloses all the aspects of the claimed invention set forth in the rejection of claim 1 above, except fails to disclose the method of claim 1 wherein the table managers manage routing tables and can include a plurality of tables including layer 4 connection table, layer 3 destination table, a layer 2 bridge table and a layer 2 connection table. However, Allen discloses a frame forwarding engine that is designed for parsing and translation of Layer 2, Layer 3, Layer 4 protocol headers (see page 6, lines 26-31). Therefore, it would have been obvious to one of ordinary skill in the art to modify the packet forwarding method of Chaudhri with the teaching in Allen of parsing and translation of Layer 2, Layer 3, Layer 4 protocol headers such that the routing and parsing engine of Chaudhri will manage routing tables for Layer 2, Layer 3 and Layer. The motivation to do so is to allow the system administrator the ability to configure Layer 3 forwarding and routing of IP and IPX traffic using the same hardware being used for Layer 2 and at the same speed while providing value-added features with Layer 4 functions that allow system administrators the ability to assign different traffic classifications to support mission critical applications

5. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chaudhri et al. in view of Narad et al. (US Publication 2004/0148382).

Regarding claim 27, Chaudhri discloses all the aspects of the claimed invention set forth in the rejection of claim 26 above, except fails to explicitly show the computer program product claim 26 wherein instructions to copy place the packet at an offset in the buffer to make room for any new header that could be prepended to the packet for packet forwarding. However, Narad discloses up to (112) bytes of encapsulation header(s) can be inserted simply by copying the ethernet header 610 upwards into the Pad Space 608 by the number of bytes necessary to make room for the inserted headers (see paragraph 0281). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the packet forwarding method of Chaudhri with the teaching in Narad of copying the Ethernet header at a location in the Pad Space such that it will make room for any new header that could be prepended to the packet for forwarding. The motivation to do so is to support the addition of encapsulation protocol headers without copying the entire packet.

Allowable Subject Matter

6. Claims 11, 14-18, 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and rewritten to overcome the claim objections set forth above.

The following is a statement of reasons for the indication of allowable subject matter:

In claim 11, the method claim 10 wherein if the decap and encap flags are set,

adding the decap byte count a packet start offset and subtracting the encap byte count from the packet offset and

prepending the encap flags to the packet.

In claim 23, the computer product of claim 22 wherein if the decap and encap flags are set, the computer program executes instructions to:

add the decap byte count to a packet start offset and subtracting the encap byte count from the packet start offset; and

prepend the encap flags to the packet.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 6,826,615 to Barrall et al.

US Patent 5,54,764 to Davis et al.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WELLINGTON CHIN
SUPERVISORY PATENT EXAMINER

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